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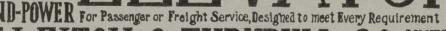
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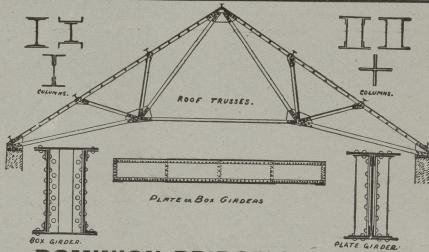


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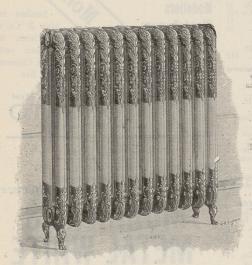
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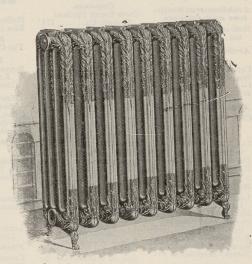
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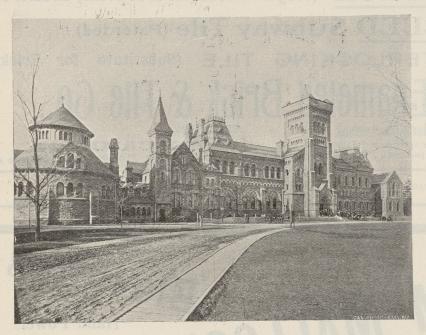
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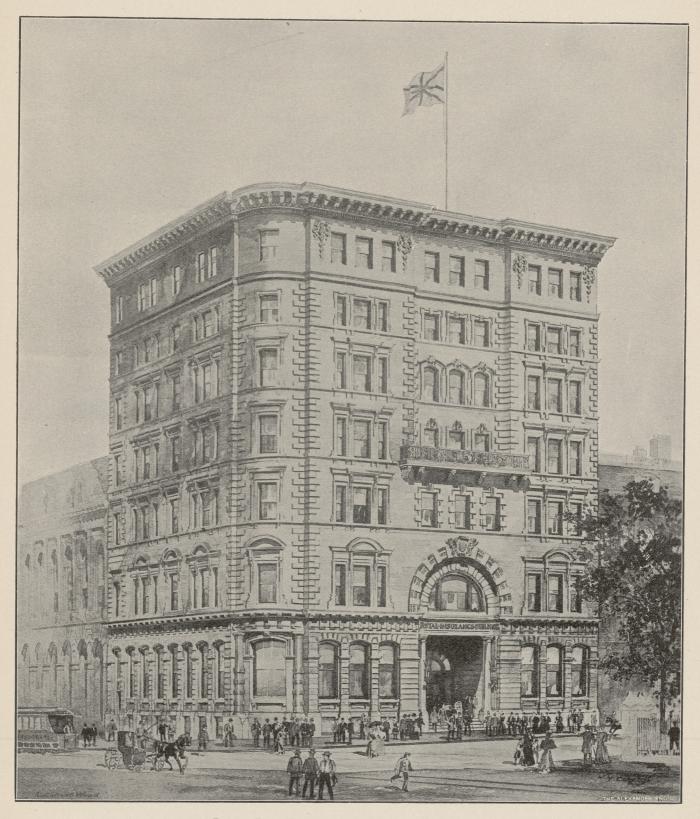
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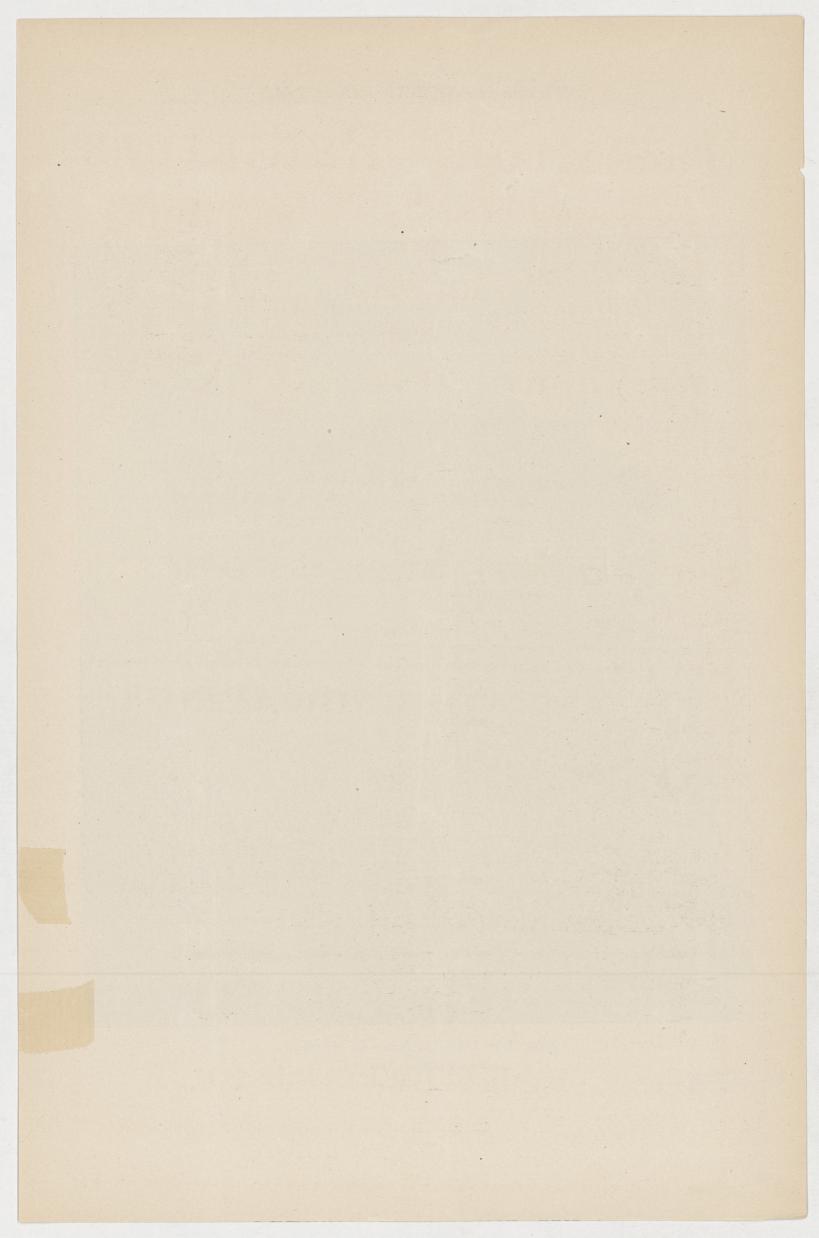
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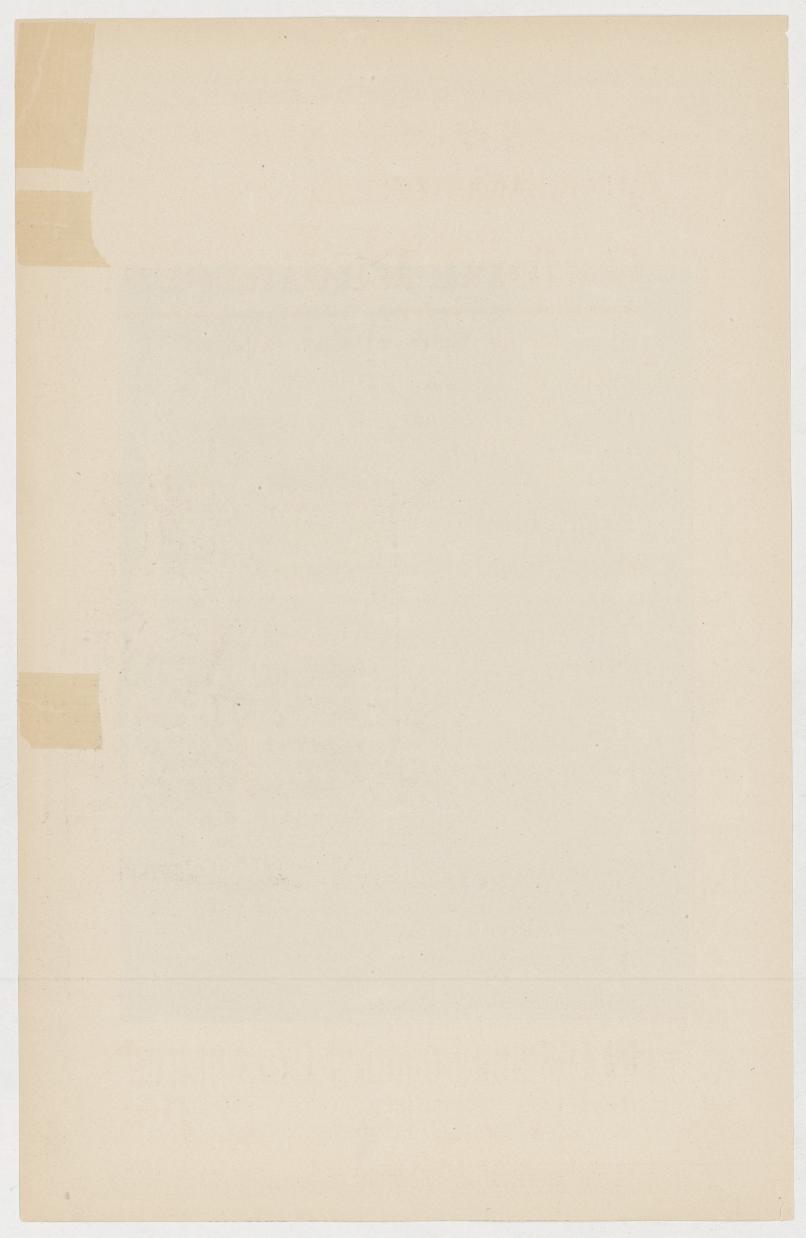
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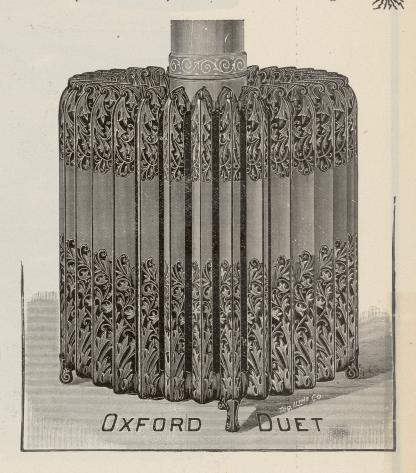
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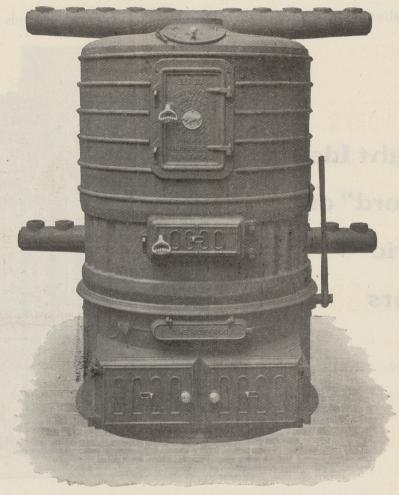
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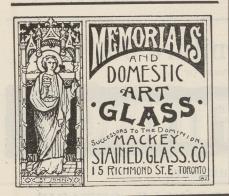
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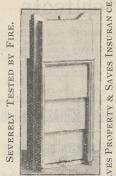
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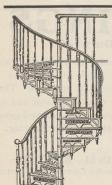
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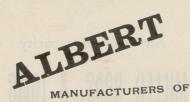
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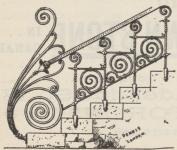
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## The Canadian Architect and Builder

VOL. XV.-No. 172.

APRIL, 1902.

#### ILLUSTRATIONS ON SHEETS.

Physician's Office and Residence, College Street, Toronto.—Beaumont Jarvis, architect.

#### ILLUSTRATIONS IN TEXT.

St. Paul's Presbyterian Church, Brandon, Man.—W. H. Shillinglaw, Architect. Portion of Chimney Hood.—Designed and Executed by the Elliott & Son Co., Toronto.

#### ADDITIONAL ILLUSTRATIONS IN ARCHITECTS' EDITION.

Tite Prize Competition, 1900—Design for Gateway to a Public Park, submitted by Messrs. Thos. McLaren and Andrew Sharp, A. R. I. B. A.

Royal Life Insurance Building, Montreal.—Hutchison & Wood, Architects.

Conservatory and Crematorium, Mount Royal Cemetery, Montreal.—A. T. Taylor, F.R.I.B.A., Architect.

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Conventions.

THE National Association of Master Builders of the United States held an informal meeting in Washington on

March 5th to arrange the preliminaries for a regular convention to be held in the same city next October. Three years have passed since the last general convention of the Association. The value of such gatherings is recognized as affording opportunity for considering all important questions affecting the building industry. An occasional convention of the master builders in the various provinces of the Dominion would no doubt prove beneficial to all concerned. Apart from local Builders' Exchanges in a few cities there exists no organization in Canada among employers in the building trades.

On the 23rd inst. an influential deputation will wait on the Board of Control of the Toronto City Council,

to urge that a sum of money be appropriated sufficient to cover the cost of a report and plans by an expert for the future improvement of the city. It is understood that private subscriptions have been offered for this purpose on condition that the City Council will make an appropriation. It is certainly time that action should be taken in the direction of working out the improvement of the city on definite lines instead of piecemeal, as in the past. This should be done in the best possible manner under the direction of an expert of wide experience. The plan should include not only the city proper but the outlying parks. The cost of a preliminary report and plan should not be very large, and the working out of the scheme could then be proceeded with year by year. It is hoped that the Council will be as much alive to the future welfare of the city as are the public spirited citizens who are moving in the matter.

A gentleman who recently spent some Some Lessons from New South Wales. time in visiting Canada after having lived many years in New South Wales,

has some interesting things to say about that country. He describes it as a country of vast natural wealth. As evidence of its development mentions although the population is only 800,000, the export trade amounts to £13,000,000 annually. He states that New South Wales appears to be the Mecca towards which political theorists and economists tend, and in consequence socialistic ideas prevail to a much larger degree than in Canada. For example, all railways, telegraph lines, and public works of every kind are managed directly by the government. Asked regarding the result of these conditions, his reply was that under the prevailing system the cost of public

works is very much greater than would be the case' under our system of constructing such works by Another deplorable result is that bribery and corruption universally prevail, and the standard of public morality has become sadly impaired. Some years ago the government of New South Wales borrowed a large sum of money for the purpose of constructing a railway from one end of the country to the other, a distance of about 1,000 miles. This money, however, was never used for the purpose for which it was borrowed, but has been diverted and frittered away on a great number of minor objects. Much of it no doubt has found its way into the pockets of the politicians. There is here food for reflection for the press of this country and those who are clamouring for the control by the government and the municipalities of all kinds of business enterprises.

Much interest has been awakened England and America. among architects, builders and building workmen in England by the results achieved by the contractors in the construction of the British Westinghouse Electric & Manufacturrng Company's works at Manchester. The contractors are an American firm, Messrs James Stewart & Company, of St. Louis, Mo. Previous to the commencement of work on this factory, the average number of bricks laid per day by Union workmen in England was about 450. In a letter to the "London Times" Mr. Stewart states that the average attained under the direction of his superintendent on the Westinghouse Company's buildings has been from 1,400 to 1,800 bricks per man per day of nine hours. The averages mentioned included face brick work. On common work an average of 2,250 bricks per man per day was reached. The walls range in thickness from 19 to 23 inches. The bricks were laid in mortar. In the construction of a chimney stack at Birkenhead, by the same contractors, an average was attained of 1,976 bricks per man per day of nine hours. Mr. Stewart states that the results achieved in the last mentioned case were in part attributable to the facilities afforded the workmen, such as a double platform lift, each platform holding two barrows of bricks, one ascending the other descending. Only fifteen seconds was occupied in raising this platform to a height of 150 feet. Soft mortar was used instead of the stiff mortar usually employed in England, thus permiting enough mortar to be laid with one stretch of the trowel for half a dozen to a dozen bricks, and allowing of the bricks being laid by a light pressure of the hand and a light tap of the trowel instead of by repeated hammering of the trowel to force the brick into place, as in stiff mortar. As an incentive to the workmen, they were paid 11/2d per hour above the Trade Union rate. A record was kept of each man's work and the workman who failed to measure up to the standard were dispensed with. The new standard for workmen which has thus been established by American contractors should result to the advantage of English employers and prove a hard blow to the efforts of the Unions to restrict, to the greatest possible extent, as in the past, the amount of work which Union men shall perform. Mr. Stewart states that in the United States the workman's average per day is from 2,000 on the best class work, such as private residences, including face brick as well as common, to 2,500 and even 2,700 including face and common on other

structures. This is far above the Canadian standard. The average here is from 700 to 1,000 bricks per day seconding to the character of the work.

Justice to Tenderers

THE final action of the City Council of Toronto, with regard to awarding contracts for concrete sidewalks.

tenders for which were received recently, is being looked for with much interest. When the tenders were opened, it was found that a firm of Chicago contractors had put in the lowest bids for the bulk of the work, and the Board of Control recommended that the contracts be awarded to them. Immediately that this decision was announced, the alderman were besieged by local contractors, and the cry was raised that the successful tenderers should not be given the work because they were aliens. This objection having come to the ears of the Chicago firm, they sent a letter to the city authorities expressing their willingness to open an office in Canada, and to employ none but Canadians and Canadian material in the carrying out of the work. To our mind, this offer removed every legitimate ground of objection, and should have secured them the contracts. Such, however, has not so far been the result. The local contractors have organized and are evidently bringing to bear as much pressure as possible to compel the aldermen to withhold the contracts from the lowest bidders. It is to be hoped that a majority of the members of the Council will act justly in this matter. The local contractors are not entitled to these contracts, first, because their tenders were not the lowest submitted, and second, because they are suspected of having agreed together to extort from the city an exorbitant price for the work. If the Council violate the principle of giving contracts to the lowest tenderer, where the securities and all other conditions have been complied with, they will justly be accused of sacrificing the interests of the tax-payers and of dealing unjustly by outside contractors. The result will be that in future no outside bids will be submitted for the work in Toronto, and the local contractors will be in a position to charge what they please. The Council should either cease to publicly advertise for tenders, and let it be known that no outsider need apply, or stand by the principle of giving contracts to the lowest bidder whether he be an insider or an outsider. Since the above was put in type the contracts have been given to the City Engineer.

#### THE BEAUTIFYING OF CITIES.

The Park Committee of the City of Sherbrooke, P. Q., have arranged with Frederick G. Todd, Landscape Architect, of Montreal, to prepare plans for their various parks and squares. Mr. Todd's contract covers five years and, aside from planning for the parks, he will make a report each year dealing with the growth and extension of the city, which will take up its future needs as regards the location of public buildings and streets and the beautifying of the city.

The City of Sherbrooke is specially fortunate in having set aside an unusually large amount of land for parks and playgrounds, the area, according to the 1901 Park census, being greater in proportion to the number of inhabitants than any other city with the exception of two or three in the United States. It is a matter for congratulation also that the City Council have decided thus early to have a general scheme definitely laid down which can be followed from year to year.

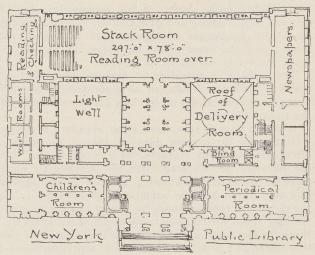
#### LIBRARY DESIGN.

In former days a library was essentially a place where books were kept; now it is essentially a place for giving out books. The value of the volume was the original motive for building; the value of its contents is the motive now. So that a library has become a place where books are stored, safely of course, but for the main purpose of distribution on as large a scale as possible; and the leading idea is how to get the books into the hands of the reading public. Librarians are not even content with this, but want to enlarge the limits of the reading public and create a reading public of a better kind, by taking the younger generation in hand and inducing them to read good books.

This being the case the commercial analogy has impressed itself upon library methods. Librarians trying to reach the public take a hint where they can from the shopkeeper. Books on China were rushed to the front in Toronto Public Library long before the allied forces reached Pekin. A special Prohibition catalogue is out now, to educate the voter for the coming struggle. Slips with a list of the better books of a kind are prepared in some libraries as book marks to entice the reader, especially the young reader, from his affection for the worse.

Along with these small arts of reaching the public the great schemes have been considered, and are to some extent adopted. The late Dr. Poole of Chicago had the Newbery Reference Library built somewhat on the system of a departmental store; each department of literature in a room by itself; so that instead of conveying books from a far distant depository to the reader in a general reading room, the student can go to the department in which his researches are being made and take down for himself the books he wants. is certainly a great idea and should be, in the case it suits, a complete success. But there must be many cases for which the system creates difficulty for the reader. A reference library is the very place where one wants to be in contact with two or three departments at once. An historical work on the first floor is likely to require for its elucidation a map from the map room in the attic and an article from the periodical room on the ground floor. It seems in fact as if this system could be applied more practically to the lending department, so as to avoid procuring books from the stack rooms by a machinery of pneumatic tubes, automatic lifts and electric railways, upon which a planner pounces at once as an indication of something wrong in the plan. A borrower wants but one book; or, if he wants more than one, he wants them to take away with him; and there is no reason why he should not go from the department of fiction to that of science or elsewhere and pick up his books as he would his purchases in a departmental store. The department rooms in different stories could back upon departments of the many-storied stack room so as to bring the attendants into close contact with both the books and public; or even, if it is desired, continue into the middle class of libraries the system of open access to the shelves which is now so much in vogue in libraries of the smallest class. But open access is still on its trial. The public seems to be "indifferent honest;" and there are other difficulties, which increase with the size of the library; so that there is no question at present of open access except in small libraries,

The large public library would require a series of articles to itself. Both the public department and the working department are multifarious and tend to increase. On the one hand the library may combine, with its book departments, galleries for the display of pictures, prints, photographs, rare books and other educative objects, besides rooms for special studies, which require not only books of reference, but such additional circumstances as a table for drawing instruments, space to spread out specimens from a hortus siccus, or quiet to use a microscope. On the other hand, behind the scenes, the ordinary works of receiving, preparing, cataloguing and checking the books may be supplemented by printing and binding shops, arrangements for dealing with branch libraries, etc. These are the variations that occur in any problem and for them the architect must be briefed. It would take too much space to study now these minor circumstances, but the essential conditions of the problem may be summarized, as they appear in the plan for the New York Public Library; a plan so well considered and carried out that it may be taken to represent the best that is known on the subject at present.



The stack room runs across the back end of the building, sideways on; so that it may be duplicated without carrying the ultimate limits of the stack room further away from the delivery desk than is the case in Boston now. In this position also the stack room is in contact with the main building all along its length, and comes into close communication with numerous minor reading rooms. The main reading room, for 800 readers, is on top of the stacks. the proper place for it, not as in Boston in front of the building, with the halls between it and the stack room. Placed over the stacks, very simple arrangements suffice for communication and the delivery of books; and there are additional advantages in the way of quiet, of light and air, and of construction. There being nothing above there is no need for columns, which are not impressive when dotted over an area of this kind. The 78 feet span may be roofed over clear Finally there is the and make a noble feature. principal advantage, that the reading room can grow as the stack room grows; for, when the stack room is repeated, the reading room can be repeated too.

The other great points in this plan are that the book borrowers—the people who merely come and go—are kept away in a place by themselves; a large room, convenient for the borrowers and in close connection with the stacks, but in the basement with a side entrance peculiar to itself. The rest of the floating population are confined to the ground floor; the periodical and newspaper readers are on one side and the children on the other, as near as possible to the entrance. Thus quiet is secured for the rest of the library.

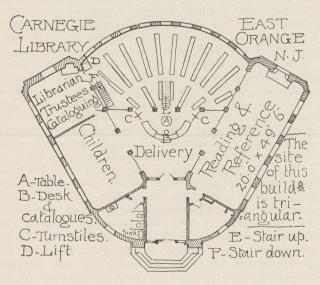
There is an undetermined middle ground between the large library and that which may be classed as small. The essential distinction which lifts this division above the small library class is the extension beyond the power of control by a central office. Detailed supervision passes from the hands of the librarian into that of a staff; and the librarian's office, instead of being the first thing to meet the eye, should be, though accessible, retired. In other words the library has reached the sub-divided stage and sub-division—the unified sub-division which keeps all purposes apart but all in touch with the books—is the main thing to be brought about. The borrowers should be kept as far as possible from the readers; the children from the grown-up readers; and the newspaper readers from both. In short the principles illustrated by the plan of the New York library may be applied on a much smaller scale, as long as there are similar combinations of purpose.

The small library has more direct poetry than any, and is an attractive problem. But its basis is severely practical. The poetry consists in the building's unity, and therein lies also the practical basis. A librarian with one or two assistants must attend to everything and oversee everything. Hence the public functions must be all on one floor and as far as possible all in sight from the administrative centre. This will make smooth the path of the librarian. It is necessary also to make his paths short. A few unnecessary teet to be traversed, coming and going all day everyday, mount up in the aggregate to a great deal of unnecessary work; and the more easily the librarian can do his

work the better the public is served.

The problem is therefore to arrange space for purposes of different kinds, all so separated as to avoid mutual annoyance, yet all in close communication with the librarian's office.

It would be well to assume a fair standard of accommodation for the present purpose, taking the stage of library development suitable for a small town. It is for libraries of this kind that Mr. Carnegie's recent gifts to towns in this country will be chiefly applied. We may then perhaps assume not less than: I. For the public; a reading room for the grown up people, a reading room for children, and ample space apart from these for the coming and going of borrowers. 2. For the librarian; a delivery desk and a private room in connection with it; for talking is not the thing in a library, and if the librarian wants to talk at length he should have a place for seclusion, for the sake of the public as well as for the sake of privacy. There should be also working room for unpacking, marking and cataloguing the books. The unpacking room would be best in the basement, but the other work should be done on the ground floor, in close connection with the librarian's office. 3. For the storage of books; plenty of room now and an opportunity to grow.



The last sub-division is the most difficult part of the library plan on account of the continual increase of the number of books. The difficulty is complicated by the present manner of admitting the public to the book-

shelves. It the librarian is to keep an eye upon the stacks where the public are handling the books, undoubtedly the circular stack room with radiating stacks is the best. If future extension of the stack room is to be considered, undoubtedly the circular form is not the best. One is inclined to think that there is too much stress laid upon the need of making a sort of policeman of the librarian. There is a New York story of a man who came down Broadway, under an umbrella, in a heavy shower. The doors on both sides of the street were full or people taking shelter; people who had not umbrellas and wanted them. The man lowered his umbrella at a shop door, looked round upon the assembled multitudes, stood up his umbrella against the wall and went in... The public will police each other if there are enough of them. There is also such a thing as creating a sentiment of honour by assuming it—judiciously. To some minds it might become a sort of sport to circumvent a fussy librarian by irregular borrowing; whereas if this were assumed to be (as it is) an act of public dishonor too mean to be thought of in connection with respectable people it would cease to be a temptation. There will always be a sprinkling of the naturally bad; but the best means of throwing difficulties in their way is to tone up the rest.

The librarian's principal business is to help the public to get the books they want or ought to have; and the principal need in the book room is plenty of space for the needs of this generation and a chance for

the next to enlarge it if they want to.

The most obvious arrangement of these functions is to place the book room and working offices in the rear, the reading rooms and delivery hall in front and the librarian between. The delivery hall and desk will come naturally in the middle and the reading rooms on each side. Fortunately the reading room for grown up people is usually required to be of a larger size than that for children so that it is not necessary to make the front part of the building symmetrical in plan. In a building of such small size and so tew parts, symmetry is difficult to manage without producing a dull exterior effect. If there are supplementary public rooms on an upper floor to be approached, the clear sweep of rooms on the ground floor is most easily preserved by throwing the staircase to the front, where t will be of great service in establishing an unsymmetrical balance of parts.

Inside there is room for a large effect. It has been urged that, for the purpose of keeping all parts in view from the delivery desk, the library should consist f an area under a single roof; subdivided, on the floor only, by desks, seats, bookcases and balustrades. Fortunately this expedient would not so well serve the end in view as a more architectonic method. It is the floor that is to be kept clear not the ceiling. The continuous ceiling would be a great sound carrier and is better broken. For architectonic purposes also—to give a sense of seclusion in the various rooms—it will be necessary to sub-divide the ceiling: for the average and the contract of the contra ing; for the eye measures a room by the ceiling rather than by the floor. If therefore the rooms are divided from the hall by an open screen of columns, there will be a satisfactory sense of seclusion in the reading rooms; while the eye can range the whole length of the library, with a sense of space increased by the intervention of columns; and everything will be in sight from the delivery desk. Columns are a slight obstruction to a person immoveably seated in a pew at church, but none at all to one moving about; and the delivery desk has usually a bowed front to give it greater extension into the hall.

It is not possible in a short space to enter further into the question of plan, much less to discuss matters of detail; high light in the reading rooms, artificial ventilation screened from dust, washable floors, the make and dimensions of book cases, etc.

The present article is only an attempt to appreciate the situation as a help to imagination in planning.

W. A. LANGTON.

#### INTERCOMMUNICATIONS.

[Communications sent to this department must be addressed to the editor with the name and address of the sender attached not eccessarily for publication. The editor does not hold himself responsible for the expressions or opinions of correspondents, but will, nevertheless, endeavor to secure correct replies to queries sent in. We do not guarantee answers to all queries, neither do we undertake to answer questions to issue following their appearance.]

From another "Subscriber."—In your answer to a subscriber last month explaining how to lay tiles, I think you did not go far enough with the explanation. All you said on the subject was correct, but was hardly enough to satisfy the requirements of a man who had

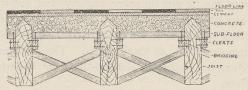


FIG. 1.—TILES LAID IN CONCRETE AND SUB-FLOOR.

never had any experience in tile laying, and if you will grant me space I will endeavor to add a few more useful suggestions to what has already been said: Where the whole floor is to be laid in tiles, and the building is a new one, the joists on which the tiles are to be laid, should be set at least five inches below the intended finished line, and should be spaced about 12 inches apart and thoroughly bridged, so as to make a stiff floor. The joists should then be covered with sound one inch boards, from three to six inches wide. These boards should be left about 1-8 of an inch apart, so that the swelling of the boards will not buckle them, and they should be well nailed to the joists. A layer of heavy tarred paper should then be put on the boards, which will have the effect of preventing the moisture from getting on the boards. I show in Fig. 1 how the work should be done where a sub-floor is employed as described above. Concrete of the proper kind is then laid on the sub-floor to the right thickness; the concrete should consist of one part of Portland cement, two parts of clean sharp sand, and two parts of clean

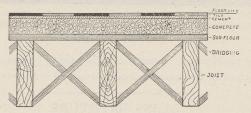


Fig. 2.—Tiles Laid on Beveled Joists and Floor.

gravel, the whole thoroughly mixed-while dry-and then sufficient water put in to form a hard solid mass. This must be placed on the sub-floor and beaten down into a solid bed, and should be from 21/2 to 3 inches thick; if it can be made a little over three inches thick, so much the better. Never use ordinary lime mortar in any shape when preparing a bed for tiles. The surface of the concrete must be level and finished to within one inch of the finished floor surface, when tiles one half inch thick are to be used, which will leave a space of one half inch for cement mortar, which must be composed of the very best quality of Portland cement, and clean sharp sand in equal quantities. The thickness of the tiles will govern the thickness of the layer of cement mortar. The tiles may then be laid in accordance with the rules given last month. If tiles are to be laid in old buildings, then cleats must be nailed to

oists five inches below the intended finished floor line, and short pieces of boards laid 1/8 of an inch apart must be fitted in between the joists upon the cleats and well nailed, and the joists thoroughly bridged as shown in Fig. 2. The corners on the upper edges of the joists should be chambered off to a sharp edge as shown, as the flat surfaces of the joists would give an uneven foundation. If the joists are of sufficient strength to admit of trimming them down an inch, so much the better. If the joists are weak, it is a good plan to nail well cleats on each side of them. When the foundation is prepared as described, proceed to finish as directed as for the sub-floor. The country contractor is more often called upon to lay tiles in hearths and vestibules, than for floors, and it may not

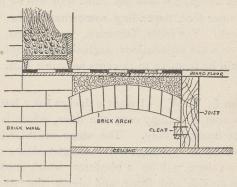


FIG. 3.—ARCHED AND TILED HEARTH.

be out of place to give a few hints regarding doing such work. As far as vestibules or entrances are concerned, the rules already given will apply, but with hearths, conditions are a little different. The best hearths are laid on a brick arch as shown at Fig. 3, and which requires no further explanation, as putting in the concrete and the cement mortar is the same in all cases. The diagram shows the manner of construction. When no brick arch is employed, the method shown in Fig. 4 will answer the purpose fairly well. In this case, the sub-floor should be formed of two inch planks; as ordinary boards would be too weak to carry the work, and the weight to which the floor would likely be subjected. It is needless to say that the work in every case should be honest and strong. The cost of laying tiles varies somewhat for labor done, but ordinary work may be done in towns near Toronto for from \$1.50 to

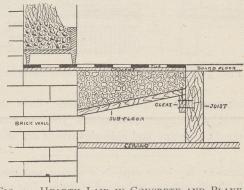


Fig. 4.—HEARTH LAID IN CONCRETE AND PLANK.

\$2 per yard super. For ornamental or figured tiles and mosaics, a much greater price will be demanded. These prices, are of course, for labor only. The tiles themselves vary in price according to style and quality. English tiles are much the better, and wear better than American tiles, but cost more. The American tile, however, does good service and looks well.

From L. V. W.—Can you inform me as to the proper figure to apply for obtaining the cost per cubic foot of baloon frame buildings, rough-cast and finished in a plain substantial manner, suited to the wants of working mechanics. Also please state the usual price per cubic foot for mills built of brick, with good stone foundations, shingle roof, with engine-house attached.

Answer:—It has always been a difficult matter to get the exact estimate per cubic foot of any building, owing to the varying conditions that prevail, and it is always better in every case, that an estimator should make a separate estimate for each building he intends to contract for. However, we give you such figures as are available, without, of course, guaranteeing their absolute correctness. For rough-cast houses such as you ask about, the cost per cubic foot will be from 3 to 5 cents per foot, depending somewhat on the finish of the work. For mills, factories, work-shops, built of brick on solid foundations, exclusive of machinery, the cost will be from 12 to 14 cents per cubic foot.

From L. V. W.:—I want a design for a back porch, with a roof or canopy over the door, which is supported with brackets only. The steps must lead down by the side of the building, not straight down from the door, so there will be a platform which must have a railing on side and front, and down the steps. The door frame has a transom light in it, so the roof must be kept up pretty high in order not to shut out the light.

Answer:—We do not know exactly what you require, but think probably the design shown at Fig. 5,

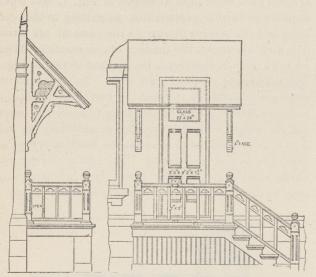


FIG. 5.—FRONT AND SIDE ELEVATION OF PORCH.

will suit your purpose, and with some little modifications that will suggest themselves, you can adapt it to your wants. Front and side elevations are shown.

To make an alloy which expands in cooling, melt together 9lb, of lead, 2lb. of antimony, and 1lb. of bismuth. This alloy may be used in fastening foundation bolts for machinery into foundation stones. Collars or heads, are left on the bolts, and after the hole is drilled in the stone a couple of short, small holes are drilled at an angle to the big hole. When the metal is poured it will flow around the bolts and also into these small holes, and it is nearly impossible for the bolt to pull out. When drilling holes into stone the water used should be carefully dried out by the use of red hot iron rods before the melted metal is poured in, in order to prevent accident by the blowing out of the metal and burning the hands and face of the workmen.

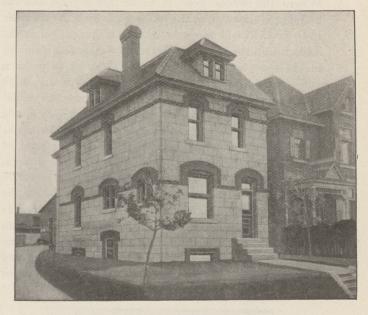
#### CEMENT BUILDINGS.

Among the many new uses to which portland cement is being applied is the construction of the outer walls of buildings. The accompanying illustration shows the residence of Mr. J. F. Maunder, of Ottawa, constructed in the monolithic style with Canadian portland cement. In Kenilworth, a fashionable suburb of Chicago, more than half the houses are built of portland cement, and have the appearance of rough stone.

Some of this work is colored in its composition. The concrete is applied to a metal lath, and does not crack or discolor. It is claimed that houses built in this way can be put up more rapidly and substantially than any other kind. One of the finest examples of this class of houses is the residence of W. W. Blair, the Chicago architect, at Kenilworth. The residence cost over \$12,000, and was erected in four months' time complete.

This style of house is said to be cool in summer and warm in winter.

Portland cement is as nearly impervious to heat as anything ever discovered. The cost of fuel to heat a



RESIDENCE OF J. F. MAUNDER, OTTAWA—BUILT OF CANADIAN PORTLAND CEMENT.

large residence so constructed is said to be considerably less than in the case of wood, brick or stone structures.

#### GLASS BATHTUBS.

Bathtubs of glass are being made in Germany and are said to have many advantages over metal and enamel, the principal one being that they are much cheaper. They are also strong. Those being made now are 5 feet 6 inches long, about 2 feet wide and about 11/2 inches thick. They are made in a solid piece, and one can be turned out complete in about five minutes. The method of manufacturing glass bathtubs, as described by a contemporary, is very simple. The molten glass is taken from the furnace and placed in a mould, which can readily be swung into any desired position. Compressed air is then admitted through a flexible tube which connects with the bottom of the mould. The air pressure is regulated by valves. As soon as the article is finished it is switched into an annealing chamber, where it is again heated and then allowed to cool. This toughens it, and after the process it is ready for use.

THE PLUMBING BUSINESS—SOME SUGGESTIONS AND CRITICISMS.\*

By John Bishop.

As manager of waterworks properties and also as owner of a plumbing and heating business, I have had twelve years' experience with master plumbers and journeymen plumbers. You may consider my remarks unbecoming to one who is actively engaged in the plumbing and heating business, but I hold that it is proper for us to criticise the manner and method of conducting the business.

I have heard the plumber accused of a peculiar pedigree, namely: sired by a national association and damned by the suffering public, yet I know that under the most favorable conditions, our business is a difficult undertaking. When you compare the many who fail to the few who succeed, it requires nerve to place your money in this business. It is enough to make one serious, to see man after man lose his last dollar while apparently trying hard to win out. Trying to analyze the cause of so many failures has given me material for my remarks.

A day does not pass without your ear being tickled with some remark about the immense profits of the plumber, but as I face an association comprising ninetyfive per cent. of the master plumbers of Kansas, I see no diamonds upon your honest breasts. Few of us own the place of business we occupy, or the house in which we live; many of us do business upon borrowed capital. When we realize what a small amount of money actually sticks to our fingers, although large sums are handled by us, there must certainly be something wrong, and I have come to the conclusion that it proves a lack of business ability. I sometimes think we have been hypnotized by the oft repeated accusation of making a large percentage and actually lose sight of the principal. A man cannot succeed at this business unless it is conducted upon business principles. I can show you plumbing shops that look like opium dens, and plumber's books that look like a Chinese laundryman's accounts. Such combinations cannot win in this business. When a man seeks a plumber, he does not want to be required to go into a second-hand joint or junk shop. Do not require your customers to don jumpers and overalls to protect their clothing when they come to your place of business.

The display room of a plumbing shop should be as neat as a dry goods store. You cannot make prospective customers believe that you can sell cheap because your goods are dusty and fly speckled, and your windows and ceilings are cloudy. On the contrary, such an appearance is properly construed to mean oldfashioned, unsanitary fixtures. We can profit much by observing how other lines of business are conducted. If it pays the clothing merchant to dress his windows, it will also pay the plumber. It does not make any difference how small the shop may be, or limited the capital, it is a good investment to always keep a tidy Some master plumbers are afraid to own the place. goods they are offering for sale, at least they do not have confidence enough to invest in a creditable display stock. The day of hunting up a customer with a catalogue and trying to sell plumbing fixtures by showing pictures is past. The man who can show the goods and thereby prove his ability to complete a contract

\* Paper read befere the Kansas City Master Plumbers' Association.

within a specified time will get the good cash business. It is always a safe investment to have the fixtures for a complete bath-room on display, and it is as essential as the sign over your door. The more complete and diversified the stock, the greater the opportunity for making sales and securing contracts. It is well to remember that loss and shrinkage in value is only to be found in cheap stuff. Ask your customers to come and see your display, and the best way to do it is through the newspapers. A man, if not ashamed of his business, should give public notice of where he can be found and what he is doing. If you put in a good bath-room, your customers will have no objection if you give publicity to the matter through the newspapers. In fact, he will be pleased to learn that you are informing his friends of the fact that he has modern plumbing in his home.

Master plumbers often make a mistake in being careless in keeping their books and accounts. If you cannot do the book work promptly and properly, it will prove a good investment to employ a competent bookkeeper. A good acquisition to any plumbing shop is a girl with a type-writer; it insures legible letters, intelligent accounts and a neat office. It also tempers the wrath and subdues the profanity of your irate customer when he calls to settle his bill. It never pays to send out a crude statement. The customer is liable to jump at the conclusion that the material and labor furnished him were on the same order. The plumber should mail his customer a statement the moment the work is completed, whether it is contract or jobbing work. It is business, he is entitled to it, and when you call to see him the first of the month he cannot plead that he has not had an opportunity to check it over. Try this plan and see if payments are not made more promptly. The jobbing house and manufacturer mails you a statement immediately upon the shipment of your order, and it is only business for the plumber to do the same.

We must understand once for all that old methods are obsolete. Master plumbers must adjust themselves to changed conditions. Business must be done on a closer margin, and profits must depend upon the volume of business done. Let us get in line with the times and modern up-to-date methods. Master plumbers must take more pride in their business. They must identify themselves with the welfare of the city. They should belong to commercial organizations and contribute time, ability and money towards advancing the interests of their city, and the knowledge, experience and acquaintance thus gained, will return liberal dividends. The master plumber should so interest himself in the up-building of his city that he will be recognized as engaged in an honorable and creditable business. To be engaged in this business does not absolve a man from the duty he owes as a good citizen of contributing his share towards up-building his city or participating with political, benevolent and charitable associations for the betterment of his fellow-man. The plumber has no right to be a hanger-on. He should work for and advocate those things that will make his city more prosperous and a better place in which to live.

Let us practice what we preach by equipping our homes with modern sanitary fixtures. The masterplumber who has no bath-tub in his home, or does not use a bath-tub frequently, should not be permitted to sell sanitary fixtures.

In conclusion I desire to congratulate the plumbers of Kansas upon the many signs of improvement in our business that can be seen throughout the state. The general prosperity of the state has been felt by us, but how much of our success is due to the vigilant work of our officers, who, backed by nearly every plumber in Kansas, have been able to protect our rights and interests. Let us renew our pledge to stand firmly by the regulations of our association and comply strictly and honorably with its requirements and obligations.

#### ONTARIO PLUMBERS' ASSOCIATION.

On March 28th a meeting of delegates of a number of the local Plumbers' Associations throughout Ontario was held in Toronto for the purpose of organizing a provincial association. Among those present were: Wm. Mansell, W. H. Meredith, E. Larter, K. J. Allison, J. McKittrick, H. Hogarth, R. Ross, W. G. Adam, D. Cooper, J. H. Wilson, A. Purdy, J. Sherlock, G. Clapperton, R. Harrison, G. B. Fitzsimmons, Toronto; J. McKinley, H. A. Knox, Ottawa; A. Rogers, W. Clark, J. Stewart, W. J. Walsh, Hamilton; A. Chadfield, A. Riddell, G. Hoopell, S. P. Gourlay, St. Catharines; R. G. Sturgeon, Peterboro; H. Mahoney, R. W. Phillips, Guelph; J. H. Neelands, Barrie; P. Bull, J. Williams, St. Thomas; Charles Taylor, Brantford; Philip Gies, Berlin.

The local associations of Kingston, Cobourg, Port Hope, Simcoe, London, Windsor and Sarnia, although not represented, expressed their desire for a provincial organization.

The meeting was presided over by Mr. John McKinley, of Ottawa, president of the National Association.

A provincial association was formed, with the following officers: President, Wm. Mansell; vice-president, Wm. Clark; secretary, W. H. Meredith; treasurer, J. H. Wilson; past-president, S. P. Gourlay; executive committee, Philip Gies and H. Mahoney.

The following were appointed chairmen of committees: Legislative, T. H. Neelands; sanitary, A. Rogers; apprenticeship, Charles Taylor; essay, Robert Ross. The members of each committee will be appointed by the chairman.

A constitution and by-laws were drafted, and the appointment of a paid secretary was left in the hands of the executive. The new association will hold its next meeting in Toronto on next Thanksgiving Day.

The objects of the new organization are stated to be: To thoroughly weld trade interests together by having a perfect organization in every town and village in the province; to further sanitary laws, prevent as far as possible the evil of irresponsible parties selecting, arranging and installing material relating to the hydraulic and sanitary condition of dwellings, public and private institutions; to create and maintain a sanitary code at as high a standard as the progress of science and mechanical knowledge teaches; to promote amicable and mutual trade associations with every master plumber in the province; to combine the interest and influence of members for the protection of the trade against encroachment or imposition; to secure for the members of the trade equitable treatment in their dealings with manufacturers and dealers in supplies; to regulate the system of apprenticeship, and prevent as

far as possible the evil of deficient training; to enencourage provincial legislation in the improvement of our sanitary laws; to encourage an interchange of thought and ideas between members.

#### A LADY CONTRACTOR.

For the first time in his life David Doak, a contractor of Philadelphia, wishes he were a woman. Mr. Doak, says the Baltimore Architects' Journal, began to realize the advantages of belonging to the opposite sex when Mrs. Hugh Brady got the job of clearing out the debris after the Hunt-Wilkinson fire away from him, and he had to content himself with obtaining the contract to pull down the walls.

In the beginning Mr. Doak watched from afar with resentful, skeptical eyes as he saw a woman in a golf "But say," cap arrive with six men and dump-carts. said Mr. Doak in tones of unqualified admiration; "she's all right. She knows her business. While she was at the building I had to go away back and sit down. Nobody looked at me, nobody listened to me. My own men wouldn't pay any attention to me. She was the whole thing. They came from the papers and wanted to take her picture, but she wouldn't have it. I said 'Take me,' but nit. They told me to go away before I cracked their lenses. The reporters wanted to interview her, and she wouldn't have that either. I told them I would talk, but they said they didn't want to hear me. Is she smart? You bet she is. She makes me feel like thirty cents. Is she young? Is she good-looking? She's everything I am not," said Mr. Doak humbly. "She can get her men to fill the carts by giving them one good sharp look. I couldn't get them to do it with a club. I used to pity women just on principle; but never again," he said, "never again. I envy 'em." And he started after a man who put three shovelsful of dirt in his cart and called it a

Mrs. Hugh Brady is the only woman contractor in Philadelphia. She kept on with her husband's business when he died. She has made a success of it, and is known as a shrewd business woman. She takes contracts to haul ashes, clear away the debris after fires, or anything, in fact, that other contractors in the same line of work are in the habit of doing.

#### TERRA COTTA BLOCKS.

The lapse of twenty years has not seen much improvement in the manufacture of terra-cotta blocks for building purposes, says a writer in the British Clayworker. It is true that the blocks fit together a little better than they used to do, and there is more prompt delivery, but that is about all. The old grievance that the walls of the hollow blocks are not thick enough is still with us, though several firms have made a praiseworthy attempt to remedy this state of things. Of course, we are not speaking of ordinary clay made up into blocks, and sold as terra-cotta, but of such products as result from the real raw material, as understood by artists. A scientific study of the shinkage of clay used for good terra cotta, their behaviour in the kiln, and matters of a kindred nature has yet to be undertaken to get better results. Our knowledge in regard to this subject seems to be extended to some extent by recent discoveries in Crete, though people say that the study of ancient methods is of no use.

#### COST OF GLAZING.

A correspondent of the Painters' Magazine asks: What is it worth to lay glass on a greenhouse imbedded in putty, lapped three-sixteenths of an inch, tacked on outside with staples and cleaned up in good shape? How much per light, each 16 by 16 inches, scaffold five to eight feet, some cutting to do and ventilators to work around.

Answer.—If the work is new, and no old, hard putty to be removed, we should judge the work, exclusive of material, to be worth at least ten cents per light, as the work is really more difficult than glazing ordinary new sash with lights of similar size. But we would point out that you, being better acquainted with all the conditions of the work in question, should be able to make a closer estimate than we can at long range.

### COLOR AND ITS APPLICATION TO DECORATION.

In a recent paper on this subject presented before the Northern District of the Incorporated Institution of British Decorators, Mr. Haite said that there were two systems of decorating ceilings. One was the handdecorated ceiling, in which every possible outrage that could be imagined was perpetrated, and would con-In decorated ceilings by tinue to be perpetrated. mechanical or manufactured decoration there was not the same possibility, and he was glad that it was so. Figures of human beings should not be used in the decoration of ceilings under any consideration whatever. He had had the Sistine chapel suggested to him as an instance to the contrary; but he believed that Michael Angelo, who painted that ceiling, would have protested against placing the human figure in positions in which it could not possibly be seen, unless they lay on their backs in the centre of the room or at one particular point. As regards ceilings decorated by the aid of manufactured material, it was not by the mere application of the material, but by its use and adaptation that a decorator deserved the name. A completely satisfactory decorative effect would be practically impossible unless the ceilings were decorated or coloured. It the ceiling be left white it set up discords, instead of being in harmony. In his opinion strong colour could be used more satisfactorily on the ceiling than on any other portion of the room, inasmuch as it had no background, no pictures and no furniture. After speaking of colour and colour theories, Mr. Haite said he objected to varnishing, and said that decoration might best be keyed up by making the doors or over-mantels brilliant in colour. A colour should not be too pronounced; it was objectionable to have four or five colors announcing the fact. Decorators would find that they could often pull a scheme of colors together by the various colors so designed that they appeared to the observer to be a single colour. He spoke of the excellent influence of colour upon national character. Good colouring would dissipate half the worries that troubled people, which would seem trivial and unimportant. Depression was caused by the leaden hue of the skies and the monotonous grey of the streets. The introduction of trees into the thor oughfares of our cities had increased the joyousness of life and given us a greater and a wider sense of beauty.

He pleaded for tessellated tiles and for coloured glass and bricks in facades of buildings. He pleaded

also for colour in dress. Colour should be broken by colour, and not by neutrals—not by gold, silver, black or white. As photography was neither an art nor a science, but a connecting link between the two, so decoration might be said to be the connecting link between architecture and painting. It was both an art and a craft. It required many qualities, depending as it did upon construction for its existence and relying upon the treatment and selection of colour for its satisfactory expression.

### PEELING OF PAINT ON NEW SPRUCE TIMBER.

A subscriber of the Painters' Magazine, writing from Kings Co., N. B., speaks of the blistering and peeling of paint within one year, when applied in his locality to new spruce clapboard work, and says that this almost invariably takes place, but that he has had jobs to stand several years before peeling began, and thinks it was due to the fact that he usually does not apply paint until new work has been up for several weeks. He is now making the experiment of following up the carpenters with the paint in order to see whether there is any real foundation for his idea.

In reply the editor says:- There is not any doubt whatever in our mind but that the blistering and peeling in so short a time is, to a great extent, caused by the condition of the timber to which the paint is applied, yet, while it is a good idea to let the wood go unpainted for a time, we hardly think that a few weeks would be a great help towards seasoning, except in very warm, dry weather. We are rather inclined to believe that the original seasoning of the timber has a great deal to do with the result, but above all, that you are using a better material for priming than the other painters, who have have such poor results. Green wood and moisture are the cause of blistering in oil paints, but poor priming is usually the cause of the flaking or peeling. Boiled oil or fatty oil should never be employed in mixing paint for priming coats, nor should zinc pigments or other or other brittle earth paints be used to any extent. Pure white lead with lampblack or pure white lead with a small portion of fine washed yellow ocher, thinned with pure raw linseed oil, a little turpentine and drier, make the best priming for new spruce clapboards.

#### AN ELECTRIC RADIATOR.

The increasing use of electricity for domestic purposes renders interesting some account of the new electric radiator which has been brought out in London, England, and referred to by the Architect as follows: The device consists of a movable form, something like an asbestos fireplace. It contains four large electric heat lamps in a polished copper reflector. The heat is generated by current from an electric supply main. All that is necessary to fix them ready for use is to connect the flexible wires attached to each radiator to an electric plug which forms part of every installation. For high or low voltage they are equally adapted, heat lamps of the requisite capacity being supplied, and they work satisfactorily on alternating or continuous current. The standard size of these radiators consists of four heat lamps, sufficient to warm the air of a room 12 feet square, with a consumption of I unit per hour, but they can be regulated to one-half by means of the switches attached. For larger rooms

or halls two or more radiators can be used, or radiators can be supplied of a design containing six or more lamps, although the first method is preferable, as the heat can be taken to the point where most wanted, a special feature being their portability. But the most important is that they provide pure warm air, no oxygen being consumed by them, nor are any noxious fumes given off. Their appearance is certainly bright and cheerful, and there are no ashes or dirt to be removed after their use.

#### LEGAL.

GRAHAM V. BOURGUE. - Judgment by Judge Lount, in single court at Toronto, on appeal by defendant from report of the County Judge of Carleton, to whom the matters in dispute were referred under R.S.O. ch, 62 sec. 29, in action for price of goods sold and delivered. The contract was for delivery of a quantity of bricks subject to approval of Engineer of City of Ottawa, and to requirements of defendants. The Judge below found that defendants had made default in payment of a promissory note for \$1,750, which fell due on July 17, 1900, and which had been given by defendants for bricks delivered under the contract, and that this default was conclusive evidence that defendants were unable or unwilling to make payment, and in either case that plaintiff was justified in assuming that defendants did not intend plaintiff or themselves to be bound by the contract. Held, referring to Furth v. Barr, 9 C.P. at pp. 213, 214, that there must be an absolute refusal to perform in which non-payment is an element, and that such had not been shown, and that the evidence showed that defendants had paid a fair price for bricks which they were obliged to order by reason of failure of plaintiff to deliver, and therefore they should succeed on their counterclaim. Judgment for plaintiff for \$100.10, with costs of action, except costs of counterclaim, and for defendants for costs of counterclaim. Costs of appeal to defendants.

SCOTT AND HUDSON BUILDING CO. V. HOOPER. - T. D. Delamere for defendant, M. S. Hooper, moved in the Divisional Toronto, to set aside judgment of the District Court of Judicial District of Rainy River, or for a new trial. Action against defendants to recover \$460 on balance due for work done upon and materials supplied for a house in the Town of Rat Portage, by plaintiffs. The defendants are husband and wife, and the house is the wife's property. The trial judge found that the husband made the contract, gave all the orders for work and materials except on two or three occasions, when appelant acted, but that plaintiffs thought she was acting for her husband; that after the work was complete plaintiffs accepted the husband's promissory note for the balance due, which note still remains unpaid, but that subsequently discovering that appellant owned the house, seek to charge her as an undisclosed principal. Under these circumstances he held the case to be within Davidson v. McClelland, 32 O.R. 382; that on the evidence the appellant was an undisclosed principal, and in the absence, as here, of any alteration in the account to the principal's prejudice, the contractor was entitled to recover, but must elect which to charge, and he had not yet done so, not being aware of the facts; and that though a lien had not been registered, plaintiffs were entitled to the presumption created by R.S.O. ch. 153, sec. 5. Judgment was entered against defendants for default of defence, but afterwards the appallent was let in, by order of the court to defend, and after the trial the judge endorsed the record "let judgment be signed for plaintiffs for \$442.07, as against Mary S. Hooper, with costs, upon plaintiffs electing to abandon against Frederick T. Hooper." C. A. Masten, for plaintiff, contra. The court were of opinion that in the interest of justice the respondent must be given an opportunity to make an application to the court below to get rid of the judgment against the husband, as the order made allowing defendant M. S. Hooper in to defend destroyed the plaintiff's cause of action. Whatever order is made upon such application is to form part of this appeal, which is adjourned accordingly. Leave to appellant to consent within ten days to this appeal being dismissed without costs.

Under the heading "Bad for the Contractor," the London Contract Journal says:—The arbitration case between Ford and Co., and Bemrose and Sons, Limited, which came before the Court of Appeal, and upon which judgment was given last week,

deserves careful attention. The facts of the case lie in a nutshell. Messrs Bemrose and Sons wished to build a new factory and appointed an architect to get out the plans and specification. These were got out accordingly, and such plans and specification, together with a bill of quantities, were at the service of intending contractors. Messrs Ford and Co. tendered for the work at a price of ten thousand five hundred and fifty nine pounds, the works were completed in due course, and disputes arose upon the final certificate, the contractors claiming a sum of over five thousand pounds, whereas the final certificate allowed one thousand five hundred and thirty pounds odd. The contractors claimed that the difference was due because the bill of quantities was incorrect. There seems to have been common agreement that this was so, and we may, therefore, take this contention as correct. The legal decision practically comes to this, that the specification and plans are the only documents which can be taken into consideration in such a case as this for legal purposes, and we have every reason to know that this is the law of such cases. Although a contractor is supplied with a bill of quantities, he must take that bill of quantities for what the figures are worth, and check each item for himself to be on the safe side. While conditions of contract remain as they usually are in these contracts, it is impossible for a contractor to tender upon a bill of quantities supplied except in a speculative manner. He may assume the bill of quantities to be approximately correct, he may allow a percentage for error, and by such speculative tendering may come out on the safe side. But this is not business. The safe plan is to take out his own quantities. It will be seen that if every contractor is compelled to do this, the total cost of so taking out bills of quantities for the contracting world must be borne by the works that are constructed—that is, must ultimately be paid for by those who have the works constructed. There are great difficulties in the way of safeguarding a contractor against errors if the course suggested is not pursued. It will at once be seen that if a person desires to build a factory, the plans and specifications for which are prepared, also a bill of quantities, and tenders be made upon this bill of quantities, yet afterwards it is found that through errors the real cost of the building is very much greater than was contemplated, and if under these circumstances the contractor (who, we must bear in mind, tenders for the work at a lump sum) claims for the excess cost, the owner may be placed in a very uncomfortable position, inasmuch as in the first instance the estimated cost was that which he could afford, and a greater demand might be out of his power to meet. On the other hand, it seems hard that the contractor should be the loser by spending several thousands of pounds more upon a job through errors in a bill of quantities provided for him. As we have said, the Court of Appeal in this case held that the bill of quantities provide. I did not amount to a warranty by the building owners that the statement of quantities therein contained was correct, and thus the problem before us. Can a specification be so worded as to do justice to both parties in case of error when a bill of quantities is provided and turns out to be incorrect? We think it can, and are borne out in this view by the method pursued by a very eminent engineer in large practice. Suppose, as is often the case, the bill of quantities provided is assumed to be correct and tenders be made thereon. Assume, again, that a tender is accepted. If a limited time is permitted, the contractor whose tender is accepted to check the bill of quantities, that course would result, as a rule, in only one contractor having to undergo the expense of a thorough examination, and provision could always be made for error by means of a schedule of prices. At any rate, as the law at present exists, it is quite certain that no contractor can safely accept figures unless they are checked in his own office, by those in his own employ. The whole responsibility for correctness rests with him.

A recent issue of the proceedings of the American Society of Civil Engineers by George W. Rafter, gives the results of some experiments on the consolidation of mortar. For dry mortar mixed in proportions of 1 of cement to 1, 2, 3 and 4 of sand, with 15.5 to 17.4 pounds of water per cubic foot of mortar, the average consolidation under ramming for nine experiments was 5.4 per cent., the results usually varying from 4.1 to 6.9, with one result as low as 0.9 and one as high as 10.9 per cent. For three experiments with plastic mortar, using 16.7 to 19 pounds of water per cubic foot, the average consolidation was 4 per cent. The average of all the results was 5.1 per cent. The result of 10.9 per cent. is attributed to insufficient mixing of the mortar.

USEFUL HINTS.

MIXING GROUND COLOURS FOR GRAINING.—Maple ground, 50 parts white lead, I part golden ochre. Ash, 50 parts white lead, I part yellow ochre, I part raw umber. Light oak, 25 parts white lead, I part golden ochre. Dark oak, 50 parts white lead, 4 parts yellow ochre, I part raw sienna.

When a durable job is required in gilding upon outside work, a good body or carriage varnish may be used with advantage, especially when a good quality gold size is not obtainable at the moment. They will be found far more durable than the cheaper grades of gold size, as they are prepared from the finest oils and gums.

When a colour is placed on a gold ground it should be outlined with a darker shade of its own colour. When a gold ornament falls on a coloured ground it should be outlined with black. When an ornament falls on a ground which is in direct harmony with it, it must be outlined with lighter tint of its own colour.

In the treatment of a house there must be first of all a plan, from which the decorating and furnishing may be worked out. Not that there must be one idea running through the whole house—there must be rather a succession of ideas. Each room must have its distinctive character, and everything used in its decoration and furnishment must be in harmony with the prevailing thought.

A STRONG CEMENT, very useful for the repairs of small articles, may be made by a solution of mastic gum, say ½0z. dissolved in spirits of wine, to which should be added a similar quantity of ising glass also dissolved in spirit. To this may be added a small quantity of ground gum ammoniacum. The whole should be warmed and well mixed, and should be kept in a small bottle securely corked. The cement should, when cold, be quite stiff and set. To use, place the bottle in hot water.

The cracking of varnished surfaces may be caused by a nonelastic ground, be it colour or varnish; by a ground of too great elasticity; by applying too many coats of colour or varnish in too short a time; perishing of the elastic qualities of the varnish by the influence of atmosphere and sun heat, and the influence of ammonia and other alkalies; undesirable drying materials in the varnish or faulty manufacture thereof; and by the breaking of the groundwork under the varnish.

An investigation was recently made in Germany to determine the class of fire-bricks best suited for such purposes as lining the fire-holes and interiors of lime and cement kilns, and it was found that the best results were given by bricks containing 42-45 per cent. of alumina, provided the alumina is present in the form of normal silicate, and is not simply the result of additions of bauxite or other ingredients made for the purpose of imparting a fictitious percentage of alumina.

Hot pipes should not be placed nearer than 7 in. to any combustible materials. For notice that heat in steam increases with the pressure. Thus, in steam below pressure, or, say, under 15 lbs. to the square inch, is under 512 deg.; when 50 lbs. per square inch is reached the heat is 450 deg., or more than the melting point of tin (442 deg.) If high-pressure steam heating pipes are not carefully fixed, it is quite possible to get them sufficiently hot to destroy timber, if not to set fire to it.

Hollow blocks of cement instead of bricks are said to be coming into general use for building purposes in Denmark, the blocks being made 13x13 or 9x13, according to the character of the wall. A mixture of sand and slow setting cement is rammed into dry molds in the usual way. After about six weeks' hardening the blocks are strong enough for most building purposes. It is claimed that houses built with these blocks are fit for occupation immediately after completion, and that the inside of the wall requires neither cleaning nor preparation, but is ready for papering or painting at once.

WATER PROOF CEMENT.—It is claimed that the following recipe for water proof cement will stand both heat and water. Take freshly calcined oyster shell lime, sift it well and grind fine. Make into a paste with white of egg. Apply to the fractures and press broken pieces firmly together. The following will stand water but will not stand heat: 1. Also boil four parts, by weight, of gum shellac and one part, by weight, of borax in water until shellac is dissolved. Keep on boiling until mixture is of pastelike consistency. When required, heat and apply to fracture with a clean brush. 2. Mix hydraulic lime and water glass.

CEMENT FOR JOINING LEATHER AND IRON.—Take the best glue, soak it in cold water till soft, then dssolve it in vinegar with a moderate heat, then add one-third of the bulk of white pine turpentine, thoroughly mix, and by means of the vinegar make it of the proper consistency to be spread with a brush. Cement for rubber and metal—put powdered shellac into a wide-mouthed bottle and pour on it about ten times its weight of the strongest ammonia, and let the shellac digest for a month; a slimy mass is obtained, which is the cement required.

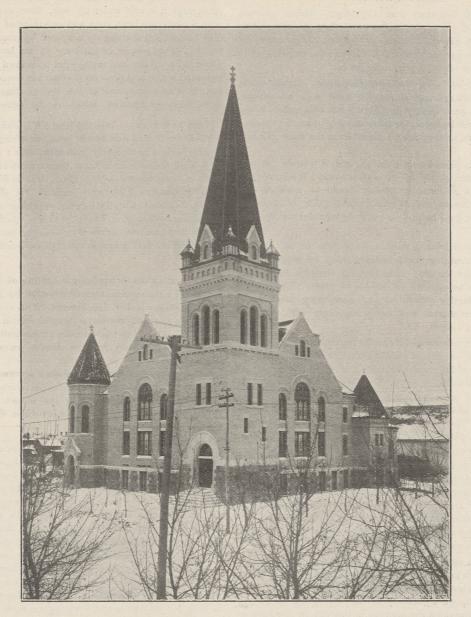
Test for Limes.—Wet the lime; if it slakes in a few minutes with decrepitation and much heat, cracking and ebullition of vapour, it is a poor, feebly hydraulic, lime; if it shows no signs of slaking for an hour or more, then cracks all over with development of heat, but no decrepitation, it is hydraulic and very suitable for mortar; if it is very difficult to slake, and develops hardly any heat, with little or no cracking or powdering, it is eminently hydraulic. These varieties harden as follows; the first is firm in fifteen to twenty days, the second in six or eight days, and the last is firm in twenty hours and hard in two to four days.

A NEW PROCESS for applying a coating of lead enamel to iron surfaces by mechanical means, invented by M. A. Dormoy, was recently described in La Nature. The articles to be coated, after being heated to redness, are placed in a doubly hermetically-sealed chamber with glazed sides; each half of the chamber can be worked alternately, and the surplus enamel powder—dusted over the metal by means of a sieve—is removed from the chamber by the draft from a high chimney. The necessary movements of the iron can be effected from the outside of the chamber and the vibration of the sieves for the purpose of distributing the lead powder is provided for by an electrical beater.

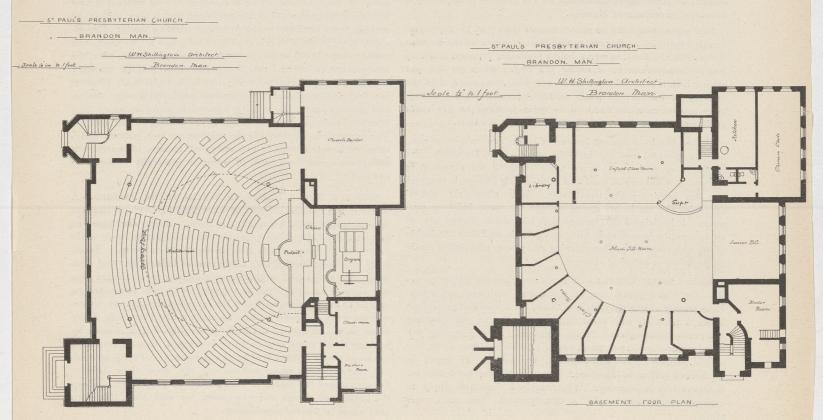
UTILISING OLD PAINT.—Every painter has at various times kegs of paint on his hands which have become hard and are practically of no further use to the uninitiated. A simple and easy way to utilise this paint says the Decorators' and Painters' Magazine, is to take it out of the package aud break it up by means of aputty knife and place it in a good iron keg with a small quantity of raw linseed oil and warm gently over the fire, which will slowly turn it soft and pliable. More oil should then be added, after which it should be taken from the fire and a small quantity of turpentine well mixed into it and allowed to stand. This rapidly converts it to its original consistency. The paint thus redeemed may not perhaps be in such a fine state of division as at first, but may be used as priming on most work.

CARBONATE OF SODA IN MORTAR.—The use of carbonate of soda to facilitate the laying of masonry in cold weather is now becoming fairly general on the continent, and is also said to be making some headway in the American building world. Experiments were made with this system as long ago as in 1890, and mortar treated with soda was employed in laying stone with the temperature as low as fourteen degrees Fahr., and the masonry was found, when inspected some time later, to be in all respects in a first class condition. The method employed is very simple, and consists practically in using luke-warm water, in which carbonate of soda has been dissolved in the making of the mortar. The proportions employed in the solution are two pounds anhydrous carbonate of soda to two and a half gallons of water, but with intense cold the amount of water is generally reduced to one half.

SIZE FOR ROUGH PLASTERED WALLS TO BE PAPERED.—A writer in the Painters' Magazine states that liquid glue is the best size for rough walls, when they are hard. Apply the glue size and let it dry hard; then knock off the sandy grains with sandpaper and fill rough places with plaster of Paris putty. Sandy walls should be levelled with a thin coat of kalsomine, and, this being dry, a thin coat of glue size should be given. Let the glue size become hard, then put on the paper with light paste, and be careful to brush or pound down the paper carefully, as rollers will not work on rough walls. To make a first class job, lining paper should be applied to rough walls. Liquid glue is made by soaking good, white glue in water over night, then melting it in the usual way and have it of good consistency. Put it, on cooling, into a wooden vessel and stir into the mass nitric acid at the rate of one half ounce to each pound of glue used. Keep the vessel well closed, and when using for wall size, thin with cold water to desired consistency.

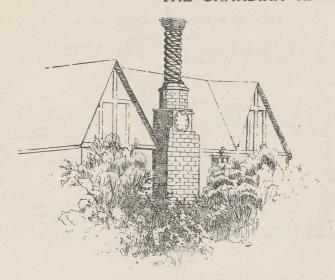


St. Paul's Presbyterian Church, Brandon, Man. W. H. Shillinglaw, Architect.



AUDITORIUM FLOOR PLAN.

#### THE CANADIAN ARCHITECT AND BUILDER



NORTHWEST LETTER.

WINNIPEG, April 5th, 1902.

The cold and the snow of winter have passed away and we are face to face with another building season. The indications are favorable for a prosperous year.

However, the old wage trouble is up again in connection with the carpenters and joiners This year the men have started early so that one of the objections to their action last year has passed away. Now their demands are known before the rush comes on. It is a vexed question, hard to solve in a manner satisfactory to all parties concerned. It admits of many arguments pro and con-points that have been debated and redebated so many times that they are almost worn threadbare by by this time. The minimum wage of 32 cents per hour is in evidence but in our mind this is not considered by the men the most important point; the recognition by the contractors of their union seems still to be the strong undercurrent which may carry both sides on to the rocks of disagreement and trouble. we are willing to acknowledge that the unions are altogether within their rights in banding themselves together for their own protection and the advancement of their trade, we doubt the advisability of trying to force on the contractors the question of the union's recognition. We believe in a good wage for good men, and if in some way the poorer class of men now in the trade could be weeded out and classified as carpenters helpers and paid a fair wage for the work performed till they could work as good carpenters able to earn for those who employ them a fair equivalent for the wage paid it would in some measure we feel right the matter. It must appear to all that in the long run it pays to employ good workmen and it also pays to pay a good wage to good men-men who will do a fair day's work for a fair day's pay. We look and wish for a closer bond of fellowship and a truer commingling of interests between capital and labor, for their interests are one and the same if looked upon in the right spirit is a spirit of fairness, a spirit of honesty in word and action, a spirit of friendliness and a desire that the interests, monetary and otherwise, should be respected. This may be a high ideal but one which if attained to would end most, if not all the labor disputes of the present day.

The buildings at present proposed are mostly of the better class. This is good evidence of the general prosperity of the community and from an architectural standpoint is most desirable, as architects in this country are so bound down to the lowest cost that there is very little opportunity to work in good good detail and ornament.

There is room in this city for a good modern house at a medium rent. As a rule rents are high, and what the average man requires is a comfortable house not too far from the centre of the city and at a rent which could be paid out of a moderate salary. To the capitalist who will put up such houses and solve the high rent problem there is certainty of a good return on the investment. The house must be warmly built, but while this is called a cold country we maintain that the amount of fuel if judiciously used should not exceed the amount used in Ontario, because as a rule we build much warmer.

A measure of great importance to the architectural profession in this city and province has for a time at least been shelved by the Legislature. The civil engineers and architects of the city and province proposed to form an Engineering and Architectural

Institute and for this purpose had applied to the local Legislature tor a charter of incorporation. The bill met with much opposition from various quarters. The Dominion land surveyors gave strong opposition. They being a close society objected to the civil engineers having certain powers as to surveys and plans which they said were exclusively their own, or in other words they had obtained a good thing from the Legislature many years ago and were determined to hold it if possible. Vested rights w a the cry, and in some measure this cry prevailed.

The section referring to the architects met with perhaps greater opposition, and from quarters least expected. The architects have proposed to regulate the entrance into the Province o foreign plans and to confine the preparation of plans and designs to all practicing as architects in the city or province at the present time, or who might register as architects within six months after the passing of the Bill. A provision was also made for an entrance examination for all wishing to enter and practice after the six months.

The intention of the Bill was to try and raise the standard of the profession, and throw around it such safeguards as would be beneficial to the general public, as well as the architects. To do this requires a certain amount of protection which can only be obtained through legislation. It was thought the Bill would lay the foundation on which architecture might be gradually raised to a position of prominence in our Province, but the benefits would accrue not so much at the present time as in the years to come. Such were the ideas of those who backed up the measure.

The labor party blindly opposed it on the so called ground of monopoly—a strange and inconsistent stand for the party to take, as their very existence is based on a general monopoly with a tyrannical clause incorporated therein. It seems strange that they cannot see that to raise the standard of architecture, would mean at the same time advancing their own trade interests. In to way would it interfere with them.

Another party strong in opposition (and least expected) was the local Builders' Exchange. Their opposition seems to have been taken from a selfish stand-point. It would appear that they wish to draw plans or have them drawn, then put in tenders for work and execute it without inspection, and so monopolize the whole, a good thing for them perhaps, but not to the best interest of the owner or the general public. They stated that the Building By-law (so-called) safe-guarded the public interests without the assistance of qualified inspection, &c., but like most By-laws of this nature drawn up by those not fitted for the work, one can make anything out of it, and its provisions may be carried out or not as influence may direct.

The above was part of the opposition which the Bill received, and while it passed through the committee stage with some amendments, it was thrown out in the House. We trust in the near future it may appear again, and may then receive fair treatment at the hands of the members. In the meantime it has started the ball rolling, and aroused we trust among the architects of the Province, a general desire to see the profession placed on a good basis and receive at the same time a fair amount of legislative protection.

#### ST. PAUL'S PRESBYTERIAN CHURCH, BRANDON, ONT.

This church, illustrations and plans of which are given on preceding page, was designed and erected last year under the direction of Mr. W. H. Shillinglaw, architect, of Brandon, Man. The basement is constructed of local field stone and the superstructure of white brick with Bedford limestone trimmings. The auditorium, including gallery, has a seating capacity of 1,000. and the Sunday school in the basement of 500. The building is heated by steam on the direct indirect system. The total cost was \$40,000.

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At the last weekly meeting of the Toronto Chapter of Architects, Mr. E. Burke was re-elected president, and Mr. Moore, secretary.

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#### NOTES.

John and James Campbell, of Seattle, have purchased the wellknown McKean stone quarry, at Picton, and will put in machinery to properly develop the property.

As a result of a recent conference between the architects and master builders of Toronto, the architects have agreed to specify that the carpenter contractor shall put down the permanent floors in buildings under construction called for by the amended building by-laws.

The Prussian Minister of Public Works ofters prizes of 5000 3000 and 2000 marks for the best apparatus for measuring wind pressure, and a further prize of 3000 marks for the instrument which has the best record after a long trial. The competition closed on April 1st.

The Royal Canadian Academy at its recent meeting in Montreal elected the following officers:-President, Robert Harris, Montreal; Vice-President, A. C. Hutchison, Montreal; Secretary-Treasurer, James Smith, Toronto. Mr. Wm. Hope, of Montreal, was elected an R. C. A., and J. G. Franchere, of Montreal, and W. St. Thomas Smith, of Toronto, R. C. A's.



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#### PERSONAL.

Mr. G. A. Reid, R. C. A., has resigned the Presidency of the Ontario Society of Artists, after many years of faithful and

Mr. Peter McMichael, of the James Robertson Co., St. John, N. B., is said to have received the appointment of general manager of the Dominion Radiator Co., of Toronto, in successsion to Mr. John M. Taylor.

Mr. G. S. Lemasine, the young English designer, who has spent some months in the office of Messrs Darling and Pearson, and Ald. S. G. Curry, architects, Toronto, is about to take a position with Messrs Castle & Son, of Montreal. Mr. Lemasine is the author of the paper on the Field of Design, and the clever sketches illustrating the same presented recently before the Ontario Association of Architects, and printed in the CANADIAN ARCHITECT AND BUILDER for March.

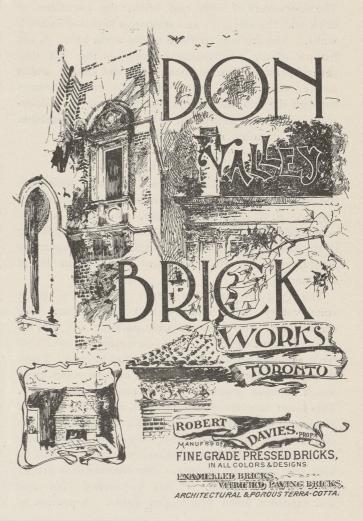
Mr. Gordon, of the firm of Gordon and Helliwell, architects, who left Toronto a year ago to execute a commission in Corea, for the American Presbyterian Church, is now in Pekin, where he will erect a hospital building. Brick is the material principally employed, but it is not up to the Canadian standard, and the same can be said of the native workmen. Mr. Gordon's Toronto friends will be pleased to hear that he is enjoying good health, and gaining experience of a novel and interesting character.

Messrs. Darling and Pearson, architects, Toronto, have decided to open a branch in Winnipeg. Mr. Percy Over, who has been with the firm for a considerable time, left Toronto for Winnigeg on Saturday last to take charge of the office in that city. Mr. Over will be greatly missed, especially by the younger members of the profession in Toronto, on account of the active part which has taken in connection with the students' classes which have met weekly in the O. A. A rooms during the past which have met weekly in the O. A. A. rooms during the past winter.

Mr. James Bloomfield, of Messrs Henry Bloomfield & Sons, artists in stained glass, Vancouver, B. C., spent a few days in Toronto, last month, while en route to New York. While there, he made the acquaintance of the leading workers in glass, and artists in other lines, and carried away a favorable impression of the city. He is looking forward to the time when Vancouver shall have so grown in population and wealth that her citizens will have more leisure than at present to devote to matters artistic. artistic.

An informal luncheon was tendered Mr. G. S. Lesmansie and Mr. Percy Over, in the O. A. A. rooms, Toronto, on the eve of their departure for Montreal and Winnipeg respectively. Mr. W. A. Langton fittingly expressed appreciation of the services rendered by these gentlemen in behalf of the educational work of the Association, the regret occasioned by their departure,

and the hope that at some future time they might find their way back to Toronto. Mr. Lesmansie was presented with a pipe and case, and Mr. Over with a full set of Shakespeares' works as mementos of the occasion, and a slight expression of hearty



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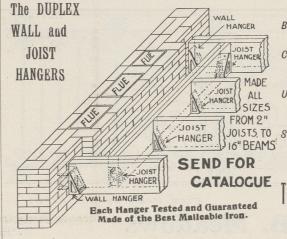
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LESSONS OF THE PARK AVENUE HOTEL FIRE.

The recent fire in the Park Avenue Hotel, New York, caused but little damage to the building, which proved to be a good example of fireproof construction. The floors were of iron and brick, the partitions of brick and the elevators and stairways enclosed in brick walls. The fire was confined to the main hall. A sad feature of the occurrence, however, is the fact that several persons were snffocated by the smoke which entered their rooms from the halls and stairways through the crevices around the transoms and doorways. This is a new phase of the fireproofing problem to which attention must be given in the future.

#### MOUNT ROYAL CREMATORIUM.

The Mount Royal Crematorium, Montreal, built from the designs and under the superintendence of Andrew T. Taylor, F. R. I. B. A., architect, Montreal, is now completed. So far as known this is the first building of the kind to be erected in Canada. The crematorium is situated to the left of the entrance of Mount Royal Cemetery.

The gateway and the porch lead to a large conservatory hall, about 81 x 42 feet inside. The conservatory will serve a double purpose. It will be used as a waiting hall for the crematorium, and also for the winter vaults, which are located beyond. From this conservatory a door leads into an ante-room, from which another leads into the crematorium proper. This latter consists of two portions, a waiting hall and a chamber in which the incinerators are placed. The conservatory has a high glass roof, with ornamental iron trusses, and a floor of mosaic marble, and will be kept well filled with flowers. The crematorium proper is lined with marble. It has an arched roof and and windows, fitted with leaded lights. A portion of

of it is lined with white tiles. The idea is to make the whole pleasing and attractive without extravagance or over ornamentation.

The style of the building is Gothic. Montreal limestone is used for the walls. The doors are of oak. The conservatory has large plate glass windows. The building will be heated by hot water pipes. The incinerators are of the most modern arrangement. Room for four incinerators have been allowed, but two only are built at present.

#### NOTES.

Mr. Henry Martin, A. R. C. A., who has of late given special attention to the painting of architectural subjects, has on view at Matthews' Gallery in Toronto, an interesting collection of water colors of his character.

A by-law of the London County Council enacts that no house, building or other erection shall be erected upon any site or portion of any site which shall have been filled up with dust or other refuse, or in or upon which any such matter shall have been deposited unless and until such refuse shall have been properly removed by excavation or otherwise from such site.

The following are the names of the successful candidates in Architectural Drawing and Building Construction at the recent closing examinations of The Toronto Technical School. Class 1.—I. Ritchie, W. H. Martin, A. Boissoneau, W. Young, G. Skinner, R. J. Webb, F. Markham, H. J. Baker, S. Young, A. Harriman. Class 2.—A. Fisher, A. R. Boyle, F. W. Robinson, H. Anthony. Pass—F. Essex, W. J. Randall, A. P. Allan, Leslie Price.

The Inland Architect has commenced the publication of a series of notes by architects in general practice in the United States, showing the cost per cubic foot of different kinds of buildings. Messrs Jenney and Mundie report the cost of a number of fire proof buildings in which iron and steel construction was employed. The figures cover a wide range from 7 4-10 cents per cubic foot for a warehouse and manufacturing building, and 10 1-5 cents for stables, to 17 1-5 cents for an apartment building, and 20 cents to 57½ cents for office buildings.

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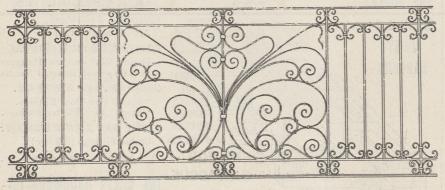
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R. C. JOHN DUNN.

We regret to be called upon to chronicle the death of Mr. R.C. John Dunn, of St. John, N. B., one of the most prominent architects of Eastern Canada. He had been ill for a considerable time. The late Mr. Dunn was a native of the city of St. John, having been born in 1847. He began the study of architecture when a lad with Mr. George N. Smith. Subsequently he visited Europe, and took a course of study in Boston, afterwards working in various parts of the United States and spending considerable time in Chicago with an eminent architect named Bovington by whom he was tendered a partnership, which he declined. In 1875 he returned to and opened an office in his native city, where he practised his profession during the remainder of his life. He designed and superintended the erection of many important buildings, not only in St. John, but throughout the Maritime Provinces. Among these may be mentioned the Aberdeen and Alexandra School Buildings, the Provincial Lunatic Asylum Annex, The residence of Mr. Geo. K. McLeod, the Department Buildings in Fredericton, the Court House and Jail at Bathurst, the Court House at Chatham, the remodelling of the Fredericton City Hall and Trinity Church. Mr. Dunn was at one time associated with Mr. Morgan Smith under the firm name of Smith & Dunn. He was held in the highest respect in his native city and throughout the Maritime Provinces, and socially was extremely popular.

THE HOUSE THAT JERRY BUILT.

This is the man for whom it was planned, And this is the scamp who put it in hand,
And filed in the footings with stones and sand
With no cement, and said, "It's grand!"
When building the house that Jerry built.

These are the bricks, as soft as cheese,
That broke in two if you chanced to sneeze;
Said Jerry: "The man what don't like these,
Lor, blow me! he will be 'ard to please;
They'll last for months—unless there's a breeze"
In the beautiful house that Jerry built.

These are the windows of packing-case wood, Said Jerry: "Of course it's understood It'll be extra for windows of real wood; These 'ere are special, and much too good." To go in the house that Jerry built.

This is the rubbish that blocked up the drain. Said Jerry: "Now don't you labor in vain; Fill it in—it'll never be seen again, It's ten to one he won't complain; The cellar is meant to collect the rain That falls on the house that Jerry built.

This is the elegant panelled door,
With the natural finish left by the saw,
Which warped till its panels fell out on the floor.
He bought it for six shillings—but "Lor!"
Said Jerry, "it looks worth ten bob more"—
Too good for the house that Jerry built.

These are the slates—some small, some great,
Most were crooked but a few were straight,
Each kept in place by the next one's weight;
Said Jerry, instructively, to his mate:
"I saves my nails and I trusts to fate"
When building the house that Jerry built.

These are the locks he bought for a song, They work three times and then go wrong.
He said: "It's lucky they ain't too strong;
There'll be some repairs a-coming along."
To be done to the house that Jerry built.

This is the price the purchaser paid
(He'd made some cash in the grocery trade);
"Dirt cheap," said the man of trowel and spade,
As the check in his horny hand was laid;
"And a better house has never been made"
For the price of the house that Jerry built.

This is the band that came up the road; The drummer drummed and the cornet blowed, And as it passed, the house like a flash And as it passed, the house like a hash
Fell suddenly down with a fearful crash,
And all that remained was a heap of smash;
And the owner said words like "blow" and "dash,"
And he stared in amaze at the heap of dust,
While the more he stared the more he cussed At the vanished house that Jerry built.

A. E. F.-In London Builders' Iournal.

Mr. John M. Taylor, who has managed so successfully the Dominion Radiator Co., of Toronto, since its inception, has resigned, and in conjunction with his brother, Mr. Adam Taylor, has bought a controlling interest in the firm of A. R. Woodyatt & Co., of Guelph, Ont. Mr. J. M. Taylor becomes general manager of the above Company while remaining a Director of the Radiator Company which he was so long connected. The good wishes of numerous friends will follow him to Guelph.

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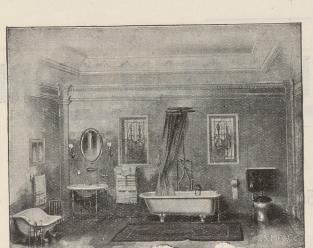
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Some idea of the truth of this assertion may be gained by a perusal of the following interesting items regarding the resources and affairs of this concern.

To begin with, their different factories, covering an area of over 100,000 square feet, are equipped in all departments with the latest and most approved machinery that provides them with appliances sufficient to cut up 25,000,000 square feet of lumber per year; of which lumber a great portion is brought in the log from the company's own limits and driven by them to their mills at Trenton, to be there sawn into the sizes required for the manufacture of hardwood and pine veneered and solid doors, sash, boxes, dressed lumber, lath, shingles, flooring, and, in fact, every species of wood goods required for the building trades, including their famous patent lumber doors, which, during the past year, have been meeting with such success in the large markets of New York and Chicago, and which they are at the present time shipping to all parts of the world.

In view of the fact that this firm enjoys large connections in Canada and the United States, they have also at their command the finest procurable assortment of hardwoods and veneers, which they principally use in the manufacture of patent lumber doors and finish.

The capacity of their door factory is about 300,000 doors per annum, which is equal to about 10,000,000 feet of lumber, and of their box factory 15,000,000 feet.

Very recently they have expended upwards of \$100,000 in the enlargement of their factories, in the construction of a new power house fitted with water-wheels of the latest and most powerful design, and in the installation of a complete and extensive system of dry kilns.

Situated as they are in the midst of a region most favorable for the manufacture and exportation of wood goods, having under their control almost unlimited water-power from a river in which thousands of horse-power are daily going to waste, and assisted in their shipping operations by the Grand Trunk, Canadian Pacific and Central Ontario Railways, and by the lake steamers which call regularly at the port of Trenton, this large concern has obtained, and will continue to hold a very prominent position among firms in the woodworking business, and at the present time they are open to compete in their lines with any manufacturer in the world.

Besides the recent fitting up of the Canadian Pacific Depot at Montreal, and the completion of other large contracts, this firm has but recently secured a contract for the supplying of 1200 patent lumber birch (mahogany finish) doors, with the casings and mouldings, to the new King Edward Hotel, Toronto, Ontario.

Messrs. Gilmour & Company, Limited, have expressed a strong desire that, should any of our readers wish prices of or information regarding any of their products, they should at once communicate with the firm through their head office, Trenton, Canada, and they state that they will be most happy to give close attention to all such inquiries.

Shellac knotting thinned down with one-third of its weight of methylated spirits forms an excellent medium for preventing or stopping suction in plaster work.

The Canadian Automatic Fireproof Door & Shutter Company, of Montreal, makes an announcement in this number regarding the device known as "Barber's Fire Doors and Shutters.' These doors and shutters are made of prepared wood or fireproof materials encased with metal. When open they are boxed up in the head of the frame in sections, there being two sets of the doors and one set for windows. When closed down they form a dead air chamber between the two sets of doors, or the one set and the windows as the case may be. The sections are counterbalanced with weights so as to be easily closed or opened. They act by a rise in temperature to 120 degrees Fahrenheit, melting the plug almost instantly. The device recently withstood a successful test in Montreal in the presence of leading under writers, architects, builders, and the officials of the fire department of that city.

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#### CORRESPONDENCE

WINTER TRANSPLANTING OF TREES.

Bell Telephone Building, Montreal, March 24, 1902.

To the Editor of The Canadian Architect and Builder.

Sir,—In your editorial on "Winter Transplanting of Trees" you infer perhaps without intending to do so that the transplanting of trees in winter is a difficult operation and as yet is only being experimented with.

As a matter of fact, the moving of trees in winter is very easily done at a comparatively small expense and the percentage of loss should be very small if reasonable care is taken.

The usual method employed is to prepare the holes which are

done at a comparatively small expense and the percentage of loss should be very small if reasonable care is taken.

The usual method employed is to prepare the holes which are to receive the trees by making an excavation which shall be at least one foot deeper and eighteen inches wider than the ball which it is to receive. A liberal supply of good earth should then be prepared and kept from freezing so that it may be used to pack in around the ball at the time of moving. The trees themselves should be prepared for moving by digging about them a trench varying in depth and distance from the trunk according to the size of the tree. Ordinarily it is sufficient to dig the trench three feet distant from the trunk and two feet deep for a tree 6-10 inches in diameter, while with a tree from one foot to eighteen inches in diameter, the trench should be from four to five feet from the trunk and three feet deep. Some special trees require more earth than this and some can be moved with much less, but the above is a good general average. Before the ground freezes it is best to cut away the ball of earth underneath so as to leave only sufficient earth for the tree to stand on. The tree should then be guyed and left standing until the ball of earth is well frozen, after which time it is a very easy matter to tip it over and put a drag under it or to move it with a derrick. If the soil is very sandy it is well to wet the ball of earth about the tree and let it freeze. It is quite important that the trees should be moved after the first heavy freeze, for if allowed to freeze and thaw several times, many of the roots are sure to be broken by the expansion and contarction of the earth.

Three years ago I moved twelve trees near Boston which ranged from eight to twenty inches in diameter without the loss of a single tree, in fact most of the trees hardly showed that they had been disturbed. There is no special credit attached to this operation, but I merely mention it as a fact to demonstrate the feasibility of moving trees in w

Yours very truly,

FREDERICK G. TODD.

#### HOLLOW BUILDING BLOCKS.

NEW YORK, March 24th, 1902.

To the Editor of THE CANADIAN ARCHITECT AND BUILDER.

SIR,—In your latest issue, page 41, under the caption "Tests of Strength of Hollow Building Blocks," you state that the principal advantage in their use for wall building was in the saving of weight, and you request the opinion of others as to other savings. The hollow blocks used for the purpose indicated are different from the usual 4 x 8 x 12 porous terra-cotta ones employed in partition construction; they are hard burnt, heavier, weighing about 20 lbs. each. The saving in material, labor and freight is considerable as shown below: A wall 50 feet long, by 10 feet high, 12 in. thick, would require of common brick, 8x33/4x2 1-2 about 11,000 weighing 4 lbs. -44,000. The same wall of hollow blocks, 4 x 8 x 12, 8 in. thick, which with the addition of bond iron No. 22 I x 11/8 between alternate courses of the blocks, is far stronger than the other-would require 1,500 blocks or 500 square Difference in favor of hollow blocks.

Cost of material at factory, 11,000 common bks....\$

"""" 500 sq. ft. hollow blocks,

10c. sq. foot.... . 14,000 \$5.75 \$63.25

\$50.00 \$13.25

Difference in favor hollow blocks.

.300 \$21.60 \$64.80

 20 hours
 60c. \$12.00

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 30c. \$ 6.00 \$18.00

Difference in favor hollow blocks ... From above you will readily see that the advantage in favor of hollow blocks is appreciable. 14,000 lbs., or

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Yours truly,

A. MILLS.

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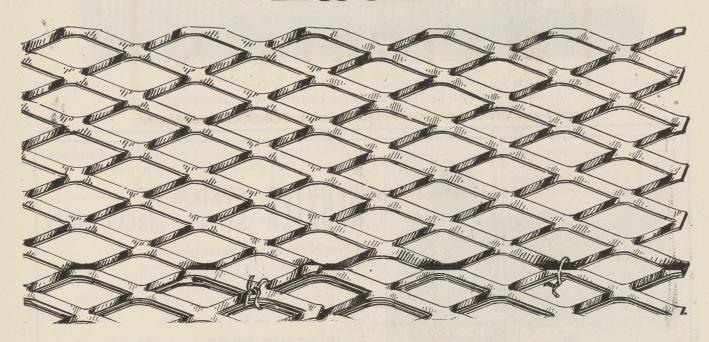
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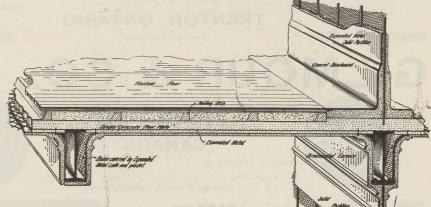
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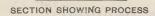
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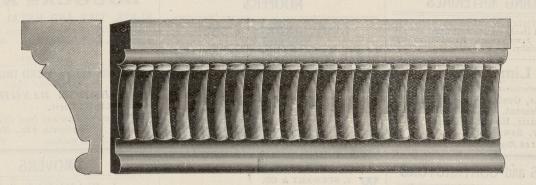
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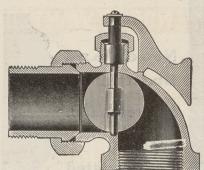
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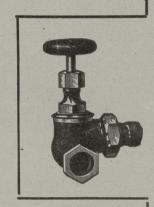


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